of each distinct species. But if two species, both equally distasteful, closely resemble each other, then the number of individuals sacrificed is divided between them in the proportion of the square of their respective numbers; so that if one species (*a*) is twice as numerous as the other (*b*), then *b* will only lose one-fourth as many individuals as it would do if it were quite unlike *a*; and if it is only one-tenth as numerous then it will benefit in the proportion of 100 to 1. It is an undoubted fact that the species of protected butterflies, like those of other groups, differ greatly in abundance of individuals, some being very rare while others are among the commonest of all butterflies. The proportion of 100 to 1, therefore, is far below the amount of benefit an uncommon species might derive by resembling a common one. The benefit to be derived is thus clear, if the protected species are subject to the danger of attacks by young birds before they learn that such species are uneatable. I agree with Dr. Müller that they are exposed to this danger; and when we consider the great number and variety of insectivorous birds in South America the danger must be considerable, and quite sufficient to render it important for a numerically weak species to reduce it to a minimum, although to a species abounding in individuals it may be of little importance. It has been suggested that young birds have an hereditary instinct enabling them to distinguish uneatable butterflies antecedent to experience; but this seems in the highest degree improbable. It has no doubt been shown by Mr. Darwin that monkeys in captivity have a dread of snakes, and Mr. Jenner Weir believes that birds have an instinctive knowledge of uneatable caterpillars. But even admitting that in these two cases there is an instinctive hereditary aversion, it does not follow that the same will occur with regard to protected butterflies. Snakes form one well-marked group, and it is not alleged that monkeys distinguish between poisonous and harmless snakes; and caterpillars can also be readily divided into the two classes of edible and inedible by their green or brown (protective) colours on the one hand, and their gaudy or conspicuous colouration or hairy bodies on the other. But the protected butterflies have no such general mark of inedibility. Their colours and forms vary greatly, and cannot as a group be readily differentiated from those of other butterflies; and it is not to be accepted without actual proof that a young bird knows instinctively every Heliconoid or Danacoid butterfly in its district, as well as the protected Papilios and moths, almost infinitely varied as they are in colour and marking, among the equally numerous and equally varied butterflies of other groups. It therefore seems clear to me that we have here a *vera causa* for the acquisition of true protective mimicry by the less abundant species of inedible butterflies.

There is however yet another cause which may have led to mimicry in these cases, and one which does not appear to have been discussed by Dr. Müller. The fact that the majority of butterflies are edible and are actually eaten by birds and other insectivorous creatures, while a considerable minority are distasteful and are thus protected, renders it pretty certain, *a priori*, that there exist many degrees of distastefulness. Certain species appear to be rejected by all insectivorous creatures, while some, though not eaten by birds, may be devoured by lizards, dragon-flies, or spiders. Some, too, may be eaten by some birds and rejected by others, and no ornithologist will think it strange or improbable that a trogon should have somewhat different tastes from a tyrant-shrike or a swallow. Again, in some species the distastefulness may extend to all the stages of egg, larva, pupa, and perfect insect, while in others it may be confined to one or more of these stages; or special dangers may exist for one species which are absent in the case of another. But it is evident, that, if these differences exist, it will be advantageous for the less protected to mimic the more completely protected species, and the fact of the affinity between the different genera, with perhaps some tendency to revert to a common style of colouration or marking, will afford facilities for the development of this class of mimicry even greater than occur in the case of the distinct and often remote families of completely unprotected butterflies. We need not, therefore, be surprised to find whole series of species of distinct genera of Heliconoid butterflies apparently mimicking each other; for such mimicry is antecedently probable on account of the greater need of protection of some of these species than others, arising either from some species being less distasteful to certain enemies, or less numerous, and therefore likely to suffer to a serious extent by the attacks of inexperienced birds. When these two conditions are combined, as they often would be, we have everything necessary for the production of mimicry.

The explanation now given, so far as it refers to the various degrees of protection, may be extended to explain those cases in which various groups of Nymphalidæ or other families appear to mimic each other; such as Catagramma, Callithea, and Agrias in one series, and Apatura with Heterochroa in another. In my "Tropical Nature" (p. 257) I have remarked—"Here, again, neither genus is protected, and the similarity must be due to unknown local causes"; but this is more than we know, and I now think that some of these groups—perhaps Catagramma and Heterochroa—are partially protected, and the advantage of sharing in this partial protection has led species of altogether unprotected and much persecuted groups to gain some protection by mimicking them, whenever their general form, habits, and style of coloration offered a suitable groundwork for variation to act upon.

If these views are correct we shall have the satisfaction of knowing that all cases of mimicry are explicable by one general principle; and it seems strange to me now that I should not have seen how readily the principle is applicable to these abnormal cases. The merit of the discovery is however wholly due to Dr. Fritz Müller; and it is to be hoped that he will complete his work by obtaining, if possible, evidence of its correctness. The chief thing required is an experimental proof of various degrees of inedibility in butterflies, during the different stages of their life-history; and also some observations as to the comparative abundance of the species of protected butterflies which mimic each other. If to this can be added the proof that such groups as Catagramma, which seem to be the objects of mimicry, are partially protected by inedibility, the chief remaining difficulty in the application of the theory of natural selection to all known cases of protective imitation will have been cleared up.

ALFRED R. WALLACE

NOTES

IN reference to the Darwin Memorial, to which we referred last week, the honorary secretaries have issued a circular asking for contributions to the fund. In this memorial it is stated that though the works of Charles Darwin are his best and most enduring memorial, it is felt by his many friends and admirers that these should not be the only one. They are desirous of handing down to posterity the likeness of a man who has done so much for the advancement of natural knowledge. They wish also to establish a fund associated with his name, the proceeds of which will be devoted to the furtherance of biological science. A committee has accordingly been formed, of which Mr. T. G. Bonney and Mr. P. Edward Dove are the hon. secretaries. The committee is one of the highest influence, comprising the leading foreign ministers, the two Archbishops, and the best-known names in all ranks and professions.

JOHANN CARL FRIEDRICH ZÖLLNER, whose death we recently announced, was born at Berlin on November 8, 1834.

His first publication of importance was entitled "Grundzüge einer allgemeinen Photometrie des Himmels" (1861), and in 1865 followed the work, which must be considered his principal one, "Photometrische Untersuchungen mit besonderer Rücksicht auf die physische Beschaffenheit der Himmelskörper" (Leipzig, Engelmann). The photometer constructed by Zöllner compares the light of the celestial object observed with an artificial star produced by a constant source of light (the flame of a paraffin lamp kept at a constant height), which can be varied at will by turning two of the three Nicols through which the light from the flame has to pass. A crystal plate allows of variation of colour. With this instrument Zöllner observed both the moon, the principal planets, and the fixed stars, and the last chapter of his "Untersuchungen" contains an interesting attempt to explain all the various phenomena of variable stars, sun-spots, &c., by the gradual cooling of all the celestial bodies. In several later papers in the *Proceedings* (*Berichte*) of the Saxon Society of Sciences these ideas are further developed, particularly with respect to the nature and periodicity of sun-spots. Without knowing it Zöllner here followed in the footsteps of Buffon. Zöllner next directed his attention to spectrum analysis, and on February 6, 1869, he read a paper before the Saxon Society on a method of observing the solar prominences in full sunlight; but Zöllner did not obtain a suitable instrument for carrying out his idea till some months later. His "Reversionsspektroskop", which produces two spectra side by side and in opposite directions, has been utilised by himself and others for determining the rate of rotation of the sun by the shifting of the spectral lines at the opposite limbs. Most of his spectroscopic researches relate, however, to the solar prominences. In 1871 Zöllner published a paper on the nature of comets in the Leipzig *Berichte*, and the following year he republished this paper together with two papers by Olbers and Bessel, and a number of chapters "On the Theory of Comprehension" in his well-known book, "Ueber die Natur der Cometen," which excited much comment at the time, and made him many enemies. About the same time a new chair of "Physikalische Astronomie" was founded at the Leipzig University, to which Zöllner (who had for some years been extraordinary professor) was appointed. His astrophysical activity was at that time at its height, but soon after he turned his attention to spiritualism, which seems to have absorbed all his energy of late years.

IT is proposed to hold a meeting of the subscribers to the memorial to the late Prof. Rolleston on Thursday, June 1, at 3 p.m., in the Library of the Royal College of Physicians, for the purpose of determining the form that it shall take.

MR. J. L. E. DREYER, assistant at Dunsink Observatory, has been appointed to succeed the late Dr. T. Romney Robinson as director of the Armagh Observatory.

PROF. HAECKEL has returned to Jena from his voyage to Ceylon.

THERE have been great rejoicings at Lucerne this week in connection with the opening of the St. Gothard Tunnel.

WITH reference to the communication which we published last week, from Mr. T. F. A. Brown, on the cuckoo singing at night, we have received letters from several correspondents, detailing observations similar to those of Mr. Brown. It was not a previously unknown fact that cuckoos call at night, but the fact is probably not so familiar as it might be.

M. JANSSEN took magnificent photographs of the recent eclipse at the Meudon Observatory, Paris, where his revolver was set into operation to determine the first and the last contact. He also took two series of photographs 90 cent. diameter, one negative, and the other positive by direct exposure, with two large refractors. This is the first time that the whole photographic power of the Meudon Observatory has been set into operation. In the sitting of May 22 of the Academy of Sciences, M. Janssen presented the photographs of the last contact obtained with his revolver during the eclipse, on Daguerreotype plates. He stated that the inspection of the several images proved the contact to have taken place at a later time than that calculated. He presented also a large image, 90 cent. in diameter, obtained with his large refractor, and stated that he was unable to detect any difference in the immediate vicinity of the moon in the representation of faculæ and the minute details of the sun's structure. He considered the fact to be opposed to the existence of a sensible lunar atmosphere, as inferred from the spectroscopic observations of the French astronomers in Egypt.

ON May 17, M. de Mahy, the French Minister of Agriculture, presided at the laying of the first stone of the Observatory of Ventoux, at an elevation of 1912 metres above the level of the sea. M. Naguet, deputy to the French Lower House and Professor of Chemistry, delivered an eloquent address on the opportunity of establishing mountain observatories, as inaugurated by Leverrier on the top of Puy-de-Dôme (1465 metres), and practised at the Pic du-Midi (2877).

A LOCAL observatory has been established at Besançon, in order to determine the exact time by astronomical observations. This city is considered as the headquarters of French watch and clock making.

MR. C. L. WRAGGE, F.M.S., has just established a meteorological and climatological station at the Sanitary Depôt, Stafford. Mr. J. B. M'Callum, the borough surveyor, and his brother, Mr. T. M'Callum, have kindly undertaken to observe for Mr. Wragge every morning at nine o'clock (local time). The instruments are all standards, verified at Kew. The elements of observation consist of air and earth temperature, moisture, rainfall, direction and force of wind, kind and amount of cloud, hydrometers, and probabiy ozone.

GRIESBACH of Gera (Reuss, Germany) announces the issue of Frisch's edition of Kepler's Works (eight vols.) at about one-half the original price.

THE June number of the *American Naturalist* will contain a biographical notice of the late Mr. Darwin by Dr. Packard, and the articles will be devoted almost exclusively to the subject of Evolution.

M. W. DE FONVIELLE writes to us as follows:—"I am in a position to send a few interesting particulars of an aëronautical ascent which was made on May 18 by M. Eloy, in compliance with the programme alluded to in last week's NATURE. The ascent was made on the 11th day of a well-defined period during which the prevailing wind was almost without intermission a strong north-easterly breeze which has been detrimental to agriculture. The sky was clear deep blue, and the air cold and dry. A large number of dense small cumuli, dark, well defined, with round edges, were seen carried by with the wind almost without intermission, except during the eclipse, when the weather was magnificent. This period having terminated only on the 20th by a total change of wind, the observations taken may be considered as giving a fair idea of the atmospheric conditions which prevailed during so many days. These clouds were floating at an altitude of more than 2000 metres, and very cold, the thermometer having descended abruptly to $-4°$ and $-6°$ centigrades. When crossing this cloud, the aërial travellers perceived no isolated flakes of snow, but the air seemed illuminated by sudden lights, as if rays travelling from the sun had been reflected by minute icy particles. The balloon having ascended to the upper surface of the clouds, and travelled during more than an hour out of view of the land, the aëronauts were unable to perceive the

aureole round the shade of the balloon, which remained visible during the whole of the excursion on the upper face of the clouds. I explain this circumstance by the fact that the cloud was formed by solid water and that the aureole was less easily detected than when it is formed of vapour, being less brilliant, the same relation between these two phenomena existing for luminosity as between halos and rainbows. The aëronauts having remained at an altitude of two to three hundred metres from the clouds, were unable to perceive the coloured rings which were visible to me and M. Brissonet, navigating only at a few metres above similar legions of icy particles. It may have also occurred that our friends were blinded by the light from the sun, which at four o'clock was very powerful, and so detrimental to their eyes, that before entering the clouds they were unable to look fixedly at the earth to ascertain their path. It is the first time that I have heard of aëronauts having experienced the want of coloured spectacles to inspect our planet.

THE new Eddystone Lighthouse, which replaces Smeaton's famous work, built 120 years ago, was opened by the Duke of Edinburgh last Thursday.

UNDER date of Constantinople, May 17, an earthquake is reported to have occurred in the island of Karpathos.

THE first number of a small publication bearing the title of *Studies in Microscopical Science*, and edited by the well-known preparer of microscopic objects, Mr. Arthur C. Cole, F.R.M.S., "assisted by several eminent specialists," has just been published. It consists of a description and lithographed figure of a microscopical slide, which is issued, along with the description, to subscribers. The subject of this first number is yellow fibro-cartilage, and the preparation on the slide is a longitudinal vertical section of the pinna of the cow's ear. It is double stained in logwood and eosin, and is a well-mounted and highly-finished object. The plate is fairly good, though perhaps a little wanting in softness; it represents the section under a magnifying power of 333 diameters. The eight pages of descriptive letterpress contain—1. The name of the object and its etymology. 2. A very good description of the preparation under different powers, and of yellow fibro-cartilage in general, after the action of various reagents; also a few remarks upon its physiology. 3. An account of the different methods of preparation which may be employed, with their respective advantages and drawbacks; and lastly what seems a very complete bibliography of the subject. Altogether this first number has been well carried out, and promises well for the rest of the series. There is no doubt that *if the subjects are judiciously chosen*, this periodical will be a success, as it ought to be of great use to students and amateur workers in science. It is a pity that no list of the proposed subjects is given. It would be a decided advantage to know what the series for the present year will probably be, but beyond the fact that twenty-six histological will alternate with eighteen botanical, and eight petrological preparations, one issued each week, the prospectus tells us nothing.

A CURIOUS fact regarding a dragon-fly (*Æschna cyanea*, Müll.), often met with near Florence, has been observed by Signor Stefanelli. There were several nymphs of the animal in a cistern of water. Some which were near being transformed came out of the water a little way during the night, and, attacking several of the new-born perfect insects which had not yet begun to fly, voraciously devoured them. This singular practice (it is suggested) may explain why one finds such a small number of *Æschna cyanea*, in comparison with the number of nymphs. In raising the larvæ and nymphs of the dragon-flies, the best food, according to Signor Stefanelli, is meat, and especially fish.

THE Queenwood College Mutual Improvement Society seems to be an unusually active one. We have received a very favourable Report for the past term; the work done is very varied, and several of the lectures and papers have been published separately in a neat form.

FROM the Report of the Cardiff Naturalists' Society for the past year we learn that it is in a highly satisfactory condition.

A NEW work, entitled "The Hall Marking of Jewellery Practically Considered," by George E. Gee, author of "The Goldsmith's Handbook," "The Silversmith's Handbook," &c., is announced for immediate publication by Messrs. Crosby Lockwood and Co., London. The work will include an account of the Assay Towns of the United Kingdom, the Stamps at present employed, and will deal fully with the Laws relating to the Standards and the Marks at all the existing Assay Offices, &c. The same publishers also announce a new and enlarged edition of "The Manual of Colours and Dye Wares: their Properties, Applications, Valuation, Impurities, and Sophistications," revised and enlarged by the author, Mr. J. W. Slater.

A REVISED edition of the rules for the International Fisheries Exhibition to be held at South Kensington next year, has been issued. Among the prize essays are the following:—(1) 100*l.* The Natural History of Commercial Sea Fishes of Great Britain and Ireland, with special reference to such parts of their natural history as bear upon their production and commercial use. This would include natural history, habits and localities, fish frequent at different seasons, and artificial propagation. (This will not include the Salmonidæ.) (2) 100*l.* The effect of the existing National and International Laws for the Regulation and Protection of Deep Sea Fisheries, with suggestions for improvements in said laws. (3) 100*l.* On improved facilities for the capture, economic transmission and distribution of sea-fishes Second-Class Prizes (amount not determined):—(1) On the introduction and acclimatisation of foreign fish. (2) On the propagation of freshwater fish, including Salmonidæ. (3) On oyster culture. (4) On the best means of increasing the supply of mussels and other molluscs (oysters excepted) used either for bait or food.

IN a recent paper called "Le Grain du Glacier" (*Arch. des Sciences*, April 15), Prof. Forel ably investigates the phenomena of glaciers, developing a theory similar to Hugi's and Grad's, and which he would rather designate by *increase of the crystalline grain*, than by *dilatation*. The crystalline grain is found to increase as the glacier descends: from the size of a small nut at the limit of the *nevé*, it becomes as big as a hen's egg at the terminal part; Prof. Forel has seen grains at the lower end of the Aletsch and other glaciers, 7 or 8 ctm. (over 3 in.) in the longer diameter. He estimates the volume-increase at about 4½ per cent. annually. Molecular affinity is the force which augments the crystal at the expense of the water which has penetrated the mass, circulating in capillary fissures. For details of the theory, and meeting of objections, we must refer to the original. *Inter alia*, Prof. Forel finds evidence against the view (which is adverse to the dilatation theory), that the central temperature of a glacier remains at zero, invariably and constantly. He considers the mean temperature of a glacier at the end of winter to be somewhat less than seven degrees below zero C.

THE additions to the Zoological Society's Gardens during the past week include a Macaque Monkey (*Macacus cynomolgus*) from India, presented by Mr. F. Foreman; a Collared Peccary (*Dicotyles tajaçu*) from South America, presented by Mr. G. H. Hawtayne, C.M.Z.S., a Mediterranean Seal (*Monachus albiventer*) from the Mediterranean, presented by Mr. M. Yeats Brown; an Oak Dormouse (*Myoxus dryas*) from Russia, presented by Prof. Wrzesniowsky; two Argus Pheasants (*Argus giganteus* ♂ ♂) from Malacca, presented by Major McNair, C.M.G., and Mr. J. M. Vermont; two Common Buzzards (*Buteo vulgaris*)

from Scotland, presented by Mr. J. Faed; a Great American Heron (*Ardea herodias*), captured at sea off Cuba, purchased; a Ruddy-headed Goose (*Bernicla rubidiceps*), bred in the Gardens. The following species of Butterflies and Moths have been exhibited in the Insect House during the past week:—Silkmoths: *Samia cecropia, Attacus cynthia, Attacus pernyi, Attacus atlas, Attacus roylei, Actias selene, Actias luna, Cricula trifenestrata;* Butterflies: *Papilio machaon, Anthocharis cardamines, Thais polyxena, Melitæa cinxia;* Moths: *Smerinthus ocellatus, Chærocampa elpenor, Proserpinus œnotheræ, Sesia scoliæformis, Sesia spheciformis, Trochilium apiforme, Sciapteron tabaniforme, Pygæra bucephala.* Twelve specimens of a leaf insect (*Phyllium scythe*) from eggs transmitted by Mrs. M. A. Meres and Mr. Wood Mason from India, have also emerged.

OUR ASTRONOMICAL COLUMN

THE TRAPEZIUM OF ORION.—Prof. Holden, in an appendix to the Washington observations for 1877, has discussed a long series of measures of the multiple star Σ 748, made with the 26-inch refractor by Prof. Asaph Hall in 1877 and 1878. It is now known that the nebula in Orion was discovered by Cysat in 1618, thirty-eight years before Huyghens published an account of it, and his discovery is mentioned in his "Mathemeta Astronomica de Cometi Anni, 1618"; Bessel refers to it in his investigation of the elements of the great comet of this year, in the *Berliner Jahrbuch* for 1808. Cysat does not distinctly mention the number of stars, but clearly indicates their locality. Huyghens, in the "Systema Saturnium," 1659, describes his own discovery of the nebula, and refers to "three stars close together," which are shown in an accompanying figure. He saw the fourth star, completing what is now known as the trapezium of Orion on January 8, 1684, and Prof. Holden records that the last observation made by Huyghens was upon this system, on February 4, 1694, and the sketch in his manuscript journal under that date gives the four stars. In Hooke's "Micrographia," published in 1665, is a note (to which the attention of the American astronomer was drawn by Mr. H. B. Wheatley), which would imply that he was aware of the existence of the fourth star (notified by Cassini in his treatise on the comet of 1652), and of the fifth star, the discovery of which is usually attributed to W. Struve. He writes: "In that notable asterism also of the sword of Orion where the ingenious Monsieur Hugens van Zulichem has discovered only three little stars in a cluster, I have, with a 36-foot glass, without any aperture [diaphram] (the breadth of the glass being some three inches and a half), discovered five, and the twinkling of divers others up and down in divers parts of that small milky cloud." Sir John Herschel, in the *Memoirs* of the Royal Astronomical Society, vol. iii. mentions that Sir James South had pointed out to him in the original M.S. journals of the Royal Society a note which runs thus: "September 7, 1664 Mr. Hooke . . . the same relateth to have found those stars in Orion's belt, which M. de Zulichem maketh but three to be five." Prof. Holden made some special experiments in January, 1878, with the 26-inch refractor at Washington, the aperture reduced to 3½ inches, and arrived at the conclusion that if the fifth star were of the same brightness in 1664 as at this time, it would not have been discovered by Hooke; but, on the contrary, Mr. Burnham has brought together a number of cases in which the fifth star has been seen recently with such an aperture. The sixth star was detected by Sir John Herschel in 1830. Of other stars, suspected by several observers, Prof. Holden, during six years' observations of the nebula surrounding the trapezium, has not discovered any trace.

The Washington measures in 1877 were made in a dark field with the wires illuminated by a red-glass lamp; those of 1878 were made with the field illuminated, and with black wires. The mean results of the two years' observations of the four principal stars, after a complete reduction, are as follow, for the epoch 1878·0:—

	Position.	Distance.		Position.	Distance.
	° ′	″		° ′	″
ab ...	311 7·2	... 13·118	*bc* ...	95 37·1	... 21·758
ac ...	61 9·8	... 13·454	*bd* ...	32 57·7	... 8·774
ad ...	342 18·4	... 16·773	*cd* ...	299 21·0	... 19·364

The results obtained by South in 1820, W. Struve in 1836, Liaponoff in 1849, O. Struve in 1870, Nobile in 1876, and Jedrzejewicz for 1878, are brought together for comparison in Prof. Holden's paper.

Measures of the fifth and sixth stars in 1877-78, give the positions and distances subjoined, for 1878·0:—

	° ′		″
a and *a′* ...	121 25·2	...	3·984
a and *b′* ...	320 43·3	...	16·504
b and *b′* ...	352 8·0	...	4·194

In conclusion, Prof. Holden remarks: "It appears that after making due allowance for the unavoidable, accidental, and systematic errors, the comparison of all our measures on the six stars of this system shows their probable physical association."

THE COMET.—During the last fortnight the increase in the brightness of the present comet appears not to have differed sensibly from that indicated by theory. On May 21 it was hardly below 5·5m.

GEOGRAPHICAL NOTES

AT the Anniversary Meeting of the Royal Geographical Society on Monday, the medals were presented, as we said some time ago they would be, to Dr. Nachtigal and Sir John Kirk. Mr. Francis Galton gave some account of the progress of geographical teaching in schools, which the Society endeavours to promote by holding examinations and the grant of medals, &c. He quoted a passage from the report of the examiner, Prof. H. N. Moseley:—"I have," Prof. Moseley says, "to congratulate the society on the good work effected by its annual award of school medals. As my experience as an examiner in geography increases, the more I am convinced of its pre-eminent fitness as a subject of education, and the more I deplore that it is almost entirely neglected as such in this country. Competent teachers of the subject appear to be scarce indeed, but it is amply apparent from the society's examinations that most valuable results can be produced by really able instructors." This was the fourteenth year in which these examinations had been held, and fifty-six medals—four annually—had been awarded, while altogether ninety-eight boys had obtained honourable mention. Of fifty-two schools invited to compete, forty-one had sent up candidates. Among these the Liverpool School had been distinguished, its scholars having gained medals fifteen times; while Dulwich had obtained eleven medals since 1875, and two in each of the last three years. In the Scotch and Irish schools the boys were younger than in the high schools of this country, and that accounted, perhaps, for the fact that of five Scotch and seven Irish schools invited to compete, only two in each country had accepted the invitation. He regretted that the great schools of Rugby, Shrewsbury, King's College School, and St. Paul's School, London, had not yet sent competitors. The president then reviewed the progress of geography during the past year. He referred to various efforts which were being made to train those who might have opportunities of pursuing geographical research. Sir Allen Young, the president stated, was busy getting ready the whaler *Hope*, which he has hired, for the search for Mr. Leigh Smith and his party.

WE referred some weeks ago to the unusually early date at which ice appeared in the Atlantic this year; the supply has gone on unceasingly since, and the New York correspondent of the *Standard* states that the reports made by ships coming westward read like accounts of Arctic explorations:—One ship passed icebergs almost daily between May 7 and 17, in latitude 43 deg., longitude 37 deg. Many were of immense size, and were visible for forty miles, others were within arm's length of the ship's side. Arctic animals were seen upon them, some living, and others skeletons. The Atlas liner *Ailsa*, from Aspinwall, reports that in the middle of the afternoon of the 7th it was dark, and lights were necessary. Ten waterspouts were observed whirling in dangerous proximity to the ship. They were rendered visible by the lightning. The captain of her Majesty's ship *Tenedos* reports that the ice is nearly solid from Cape Breton to Newfoundland, and that two ocean steamers have been caught in it. The brigantine *Rescue* was completely crushed near Belle Isle. The crew, numbering seventy-two, took to the ice, although there was a heavy rolling swell surging among the floes. A perilous passage was made by the steamship *Mastiff*, of Scotland, which has arrived at Montreal. She was among the ice for nine days. The crew and passengers, becoming desperate, cut a passage through the ice, which was sometimes twenty feet above the water. Another ship, the *Western Belle*, from Greenock, struck an iceberg off Newfoundland on May 1, and sank instantly with her captain (Frew) and thirteen hands.

HEFT V. of Petermann's *Mittheilungen* contains a long account, by Dr. Woeikof, of his journey in Mexico and Central